

We claim:

- 1 1. A surgical probe, comprising:
2 (a) a shaft defining a distal end and a proximal end;
3 a plurality of energy transmission devices supported on the
4 shaft; and (b)
5 (c) a tissue cooling apparatus supported on the shaft including an
6 outer member positioned about the plurality of energy transmission devices
7 such that a continuous fluid transmission space is defined therebetween
8 having an inlet and an outlet.
- 1 2. A surgical probe as claimed in claim 1, wherein the shaft
2 comprises a relatively short shaft.
- 1 3. A surgical device as claimed in claim 2, wherein at least a
2 portion of the relatively short shaft is malleable.
- 1 4. A surgical device as claimed in claim 1, wherein the plurality of
2 energy transmission devices comprises a plurality of electrodes.
- 1 5. A surgical probe as claimed in claim 1, wherein the tissue
2 cooling apparatus comprises a porous structure.
- 1 6. A surgical probe as claimed in claim 5, wherein the porous
2 structure comprises a microporous structure.
- 1 7. A surgical probe as claimed in claim 1, wherein the fluid
2 transmission space defines a substantially constant cross-sectional area
3 between the inlet and the outlet.
- 1 8. A surgical probe as claimed in claim 8, wherein the fluid
2 transmission space defines a substantially annular shape.

1 9. A surgical probe as claimed in claim 1, further comprising:
2 a fluid supply line associated with the inlet and supported on the
3 exterior of the shaft.

1 10. A tissue cooling apparatus for use with an electrophysiology
2 apparatus including a shaft and at least one energy transmission device
3 supported on the shaft, the tissue cooling apparatus comprising:

4 a base member defining an interior lumen that is slightly larger
5 than the electrophysiology apparatus shaft and a proximal opening adapted to
6 receive the electrophysiology apparatus shaft, the base member including a
7 fluid lumen port in fluid communication with the interior lumen;

8 a tubular member, associated with the base member, defining a
9 proximal end, a distal end, an interior lumen substantially aligned with the
10 base member interior lumen and at least one aperture located between the
11 proximal and distal ends; and

12 an outer member supported on the tubular member such that a
13 fluid transmission space is defined between the outer member and the tubular
14 member.

1 11. A tissue cooling apparatus as claimed in claim 10, wherein the
2 outer member defines a distal end, the tissue cooling apparatus further
3 comprising:

4 a fluid lumen port associated with at least one of the distal end
5 of the tubular member and the distal end of the outer member.

1 12. A tissue cooling apparatus as claimed in claim 10, wherein the
2 base member interior lumen includes a seal adapted to engage the
3 electrophysiology apparatus shaft.

1 13. A tissue cooling apparatus as claimed in claim 10, wherein the
2 tubular member comprises a flexible tubular member.

1 14. A tissue cooling apparatus as claimed in claim 10, wherein the
2 at least one aperture comprises a plurality of apertures.

1 15. A tissue cooling apparatus as claimed in claim 10, wherein the
2 outer member comprises a porous structure.

1 16. A tissue cooling apparatus as claimed in claim 15, wherein the
2 porous structure comprises a microporous structure.

1 17. A tissue cooling apparatus as claimed in claim 10, wherein the
2 outer member defines proximal and distal ends and the proximal and distal
3 ends of the outer member are secured to the tubular member.

1 18. A tissue cooling apparatus for use with an electrophysiology
2 apparatus including a shaft and at least one energy transmission device
3 supported on a distal portion of the shaft, the tissue cooling apparatus
4 comprising:

5 a base member adapted to be removably mounted on the
6 electrophysiology apparatus shaft including an inlet port and a seal configured
7 to mate with the electrophysiology apparatus shaft; and

8 a fluid transfer assembly, operably connected to the base
9 member, including an outer member in fluid communication with the inlet port
10 defining a size and shape sufficient to receive the distal portion of the
11 electrophysiology apparatus shaft in such a manner that a fluid transmission
12 space is defined between the electrophysiology apparatus shaft and the outer
13 member and an outlet port.

1 19. A tissue cooling apparatus as claimed in claim 18, wherein the
2 outer member comprises a porous structure.

1 20. A tissue cooling apparatus as claimed in claim 19, wherein the
2 porous structure comprises a microporous structure.

1 21. A tissue cooling apparatus as claimed in claim 18, wherein the
2 fluid transfer assembly includes a tubular member including a plurality of
3 apertures, the plurality of apertures being located within the outer member.

1 22. A tissue cooling apparatus as claimed in claim 18, wherein the
2 tubular member is secured to the base member and the outer member is
3 supported on the tubular member.

1 23. A tissue cooling apparatus for use with an electrophysiology
2 apparatus including a shaft and at least one energy transmission device
3 supported on a distal portion of the shaft, the tissue cooling apparatus
4 comprising:

5 a fluid transfer assembly defining an inlet, an outlet, and a size
6 and shape sufficient to receive the distal portion of the electrophysiology
7 apparatus shaft in such a manner that a fluid transmission space is defined
8 between the electrophysiology apparatus shaft and the outer member; and

9 mounting means for removably mounting the fluid transfer
10 assembly onto the electrophysiology apparatus shaft.

1 24. A tissue cooling apparatus as claimed in claim 23, further
2 comprising:

3 sealing means for forming a seal between the mounting means
4 and the electrophysiology apparatus shaft.

1 25. ^{at} A tissue cooling apparatus as claimed in claim 18, wherein the
2 fluid transfer assembly comprises a porous structure.

1 26. A tissue cooling apparatus as claimed in claim 19, wherein the
2 porous structure comprises a microporous structure.

1 27. A tissue cooling apparatus as claimed in claim 23, further
2 comprising:

- 3 sealing means for forming a seal between the mounting means
4 and the electrophysiology apparatus shaft.

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09761981-011701